

## **EXPERIMENT - 1**

**AIM : Create a basic 'Hello World' application for a mobile platform of android using the respective development environment**

**THEORY :**

**CODE :**

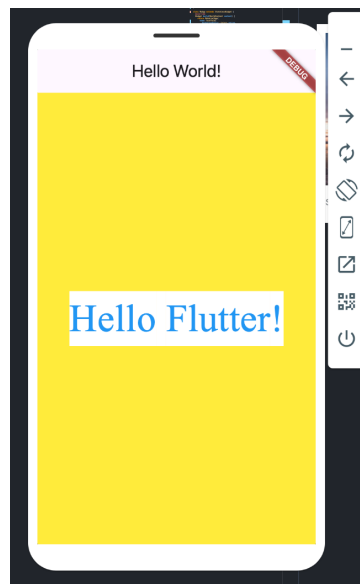
```

import 'package:flutter/material.dart';

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: Scaffold(
        backgroundColor: Colors.yellow,
        appBar: AppBar(
          title: const Center(child: Text('Hello World!')),
        ),
        body: const Center(
          child: Text(
            'Hello Flutter!',
            style: TextStyle(
              fontSize: 50,
              fontFamily: 'Times New Roman',
              color: Colors.blue,
              backgroundColor: Colors.white),
          ),
        ),
      ),
    );
  }
}

```

**OUTPUT :**

**LEARNING OUTCOME :**

## EXPERIMENT - 2

**AIM:** To implement different types of buttons in Flutter, including Elevated Button, Outlined Button, Text Button, and Icon Button.

**THEORY:**

**CODE :**

```

import 'package:flutter/material.dart';

void main() {
  runApp(const MyApp());
}

class MyApp extends StatelessWidget {
  const MyApp({super.key});

  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      debugShowCheckedModeBanner: false, // Removes debug
      banner
      home: Scaffold(
        appBar: AppBar(
          title: const Text('My App'), // App title
          leading: IconButton(
            icon: const Icon(Icons.menu), // Navigation menu
            icon on the left
            onPressed: () {
              debugPrint('Navigation menu pressed');
            },
          ),
        ),
        backgroundColor: Colors.grey[200], // Light gray
        background
        body: Center(
          child: Column(
            mainAxisAlignment: MainAxisAlignment.center,
            children: [
              Image.asset('assets/image.png'), // Ensure
              correct asset path
              const SizedBox(height: 20), // Space before the
              button
              ElevatedButton(
                onPressed: () {
                  debugPrint('Button 1 is Pressed');
                },
                child: const Text('Click'),
              ),
              const SizedBox(height: 20), // Space between
              buttons
              ElevatedButton(
                onPressed: () {
                  debugPrint('Button 2 is Pressed');
                },

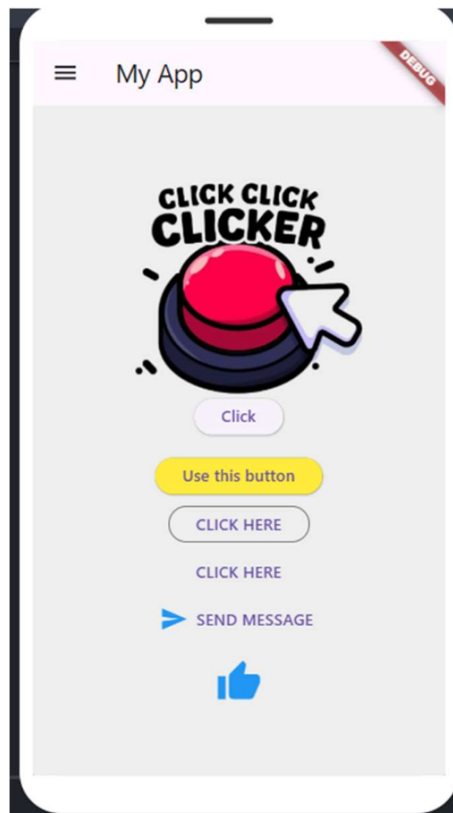
```

```

    },
    style: ElevatedButton.styleFrom(
      backgroundColor: Colors.yellow, // Set
background color
    ),
    child: const Text('Use this button'),
  ),
  const SizedBox(height: 10), // Space before the
outlined button
  OutlinedButton(
    onPressed: () {
      debugPrint('Outlined Button Pressed');
    },
    child: const Text('CLICK HERE'),
  ),
  const SizedBox(height: 10), // Space before the
no-border button
  TextButton(
    onPressed: () {
      debugPrint('No Border Button Pressed');
    },
    child: const Text('CLICK HERE'),
  ),
  const SizedBox(height: 10), // Space before the
text icon button
  TextButton.icon(
    onPressed: () {
      debugPrint('Text Icon Button Pressed');
    },
    icon: const Icon(Icons.send, color:
Colors.blue), // Icon
    label: const Text('SEND MESSAGE'), // Text
  ),
  const SizedBox(height: 10), // Space before the
thumbs-up button
  IconButton(
    onPressed: () {
      debugPrint('Icon Button Pressed');
    },
    icon: const Icon(Icons.thumb_up, size: 40,
color: Colors.blue),
  ),
),
),
),
),
);
};

```

## OUTPUT :



## LEARNING OUTCOME:

## EXPERIMENT - 2(B)

**AIM:** To develop a functional personal portfolio application using Flutter.

**THEORY:**



## CODE :

```

import 'package:flutter/material.dart';
import 'package:url_launcher/url_launcher.dart';

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      debugShowCheckedModeBanner: false,
      title: 'Portfolio App',
      theme: ThemeData(
        brightness: Brightness.dark,
        primaryColor: Colors.black,
        scaffoldBackgroundColor: Colors.black,
        textTheme: TextTheme(
          bodyLarge: TextStyle(color: Colors.white),
          bodyMedium: TextStyle(color: Colors.white70),
        ),
      ),
      home: HomeScreen(),
    );
  }
}

class HomeScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Welcome to My Portfolio'),
        backgroundColor: Colors.black,
      ),
      body: Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: [
            _buildFuturisticButton(
              context, 'View Portfolio', PortfolioScreen()),
            SizedBox(height: 20),
            _buildFuturisticButton(context, 'Contact Me',
ContactScreen()),
          ],
        ),
      ),
    );
  }
}

```

```

}

Widget _buildFuturisticButton(
  BuildContext context, String text, Widget screen) {
  return ElevatedButton(
    onPressed: () {
      Navigator.push(
        context,
        MaterialPageRoute(builder: (context) => screen),
      );
    },
    style: ElevatedButton.styleFrom(
      padding: EdgeInsets.symmetric(horizontal: 30, vertical:
16),
      backgroundColor: Colors.white,
      shape: RoundedRectangleBorder(borderRadius:
BorderRadius.circular(20)),
      elevation: 10,
    ),
    child: Text(text,
      style: TextStyle(
        fontSize: 20, fontWeight: FontWeight.bold, color:
Colors.black)),
  );
}

class PortfolioScreen extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('My Portfolio'),
        backgroundColor: Colors.black,
      ),
      body: Padding(
        padding: EdgeInsets.all(16.0),
        child: Column(
          crossAxisAlignment: CrossAxisAlignment.start,
          children: [
            Center(
              child: CircleAvatar(
                radius: 80,
                backgroundImage: AssetImage('assets/images.jpeg'),
              ),
            ),
            SizedBox(height: 20),
            Center(
              child: Text(
                'Rishi Gupta',
                style: TextStyle(
                  fontSize: 24,

```

RISHI GUPTA

```

        fontWeight: FontWeight.bold,
        color: Colors.white),
    ),
),
    SizedBox(height: 10),
    Center(
        child: Text('Flutter Developer | UI/UX Enthusiast',
            style: TextStyle(fontSize: 16, color:
Colors.white70)),
    ),
    SizedBox(height: 20),
    Text(
        'About Me:',
        style: TextStyle(
            fontSize: 18,
            fontWeight: FontWeight.bold,
            color: Colors.white),
    ),
    Text(
        'I am a passionate Flutter developer with experience
in building modern, user-friendly applications. '
        'My focus is on clean UI/UX and efficient mobile
development. Always learning and exploring new technologies.',
        style: TextStyle(fontSize: 16, color:
Colors.white70),
    ),
    SizedBox(height: 20),
    Text(
        'Skills:',
        style: TextStyle(
            fontSize: 18,
            fontWeight: FontWeight.bold,
            color: Colors.white),
    ),
    Wrap(
        spacing: 10,
        children: [
            Chip(
                label:
                    Text('Flutter', style: TextStyle(color:
Colors.black)),
                backgroundColor: Colors.white),
            Chip(
                label: Text('Dart', style: TextStyle(color:
Colors.black)),
                backgroundColor: Colors.white),
            Chip(
                label:
                    Text('Firebase', style: TextStyle(color:
Colors.black)),
                backgroundColor: Colors.white),
            Chip(

```

```

        label: Text('UI/UX', style: TextStyle(color:
Colors.black)),
        backgroundColor: Colors.white),
    ],
  ),
  SizedBox(height: 20),
  Center(
    child: ElevatedButton.icon(
      onPressed: () => Navigator.pop(context),
      icon: Icon(Icons.arrow_back, color: Colors.black),
      label: Text('Go Back', style: TextStyle(color:
Colors.black)),
      style: ElevatedButton.styleFrom(
        backgroundColor: Colors.white,
        shape: RoundedRectangleBorder(
          borderRadius: BorderRadius.circular(20)),
      ),
    ),
  ),
),
),
),
),
),
);
}
}

```

```

class ContactScreen extends StatelessWidget {
  void _launchURL(String url) async {
    if (await canLaunch(url)) {
      await launch(url);
    } else {
      throw 'Could not launch $url';
    }
  }

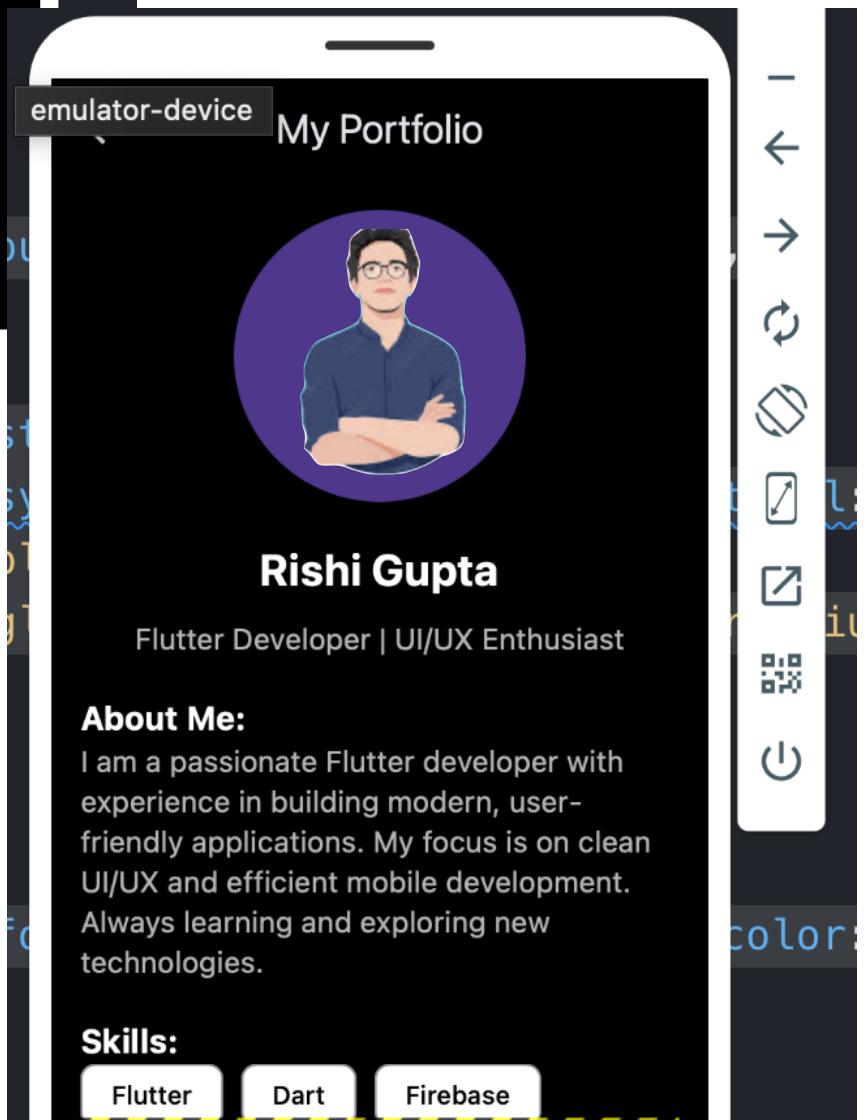
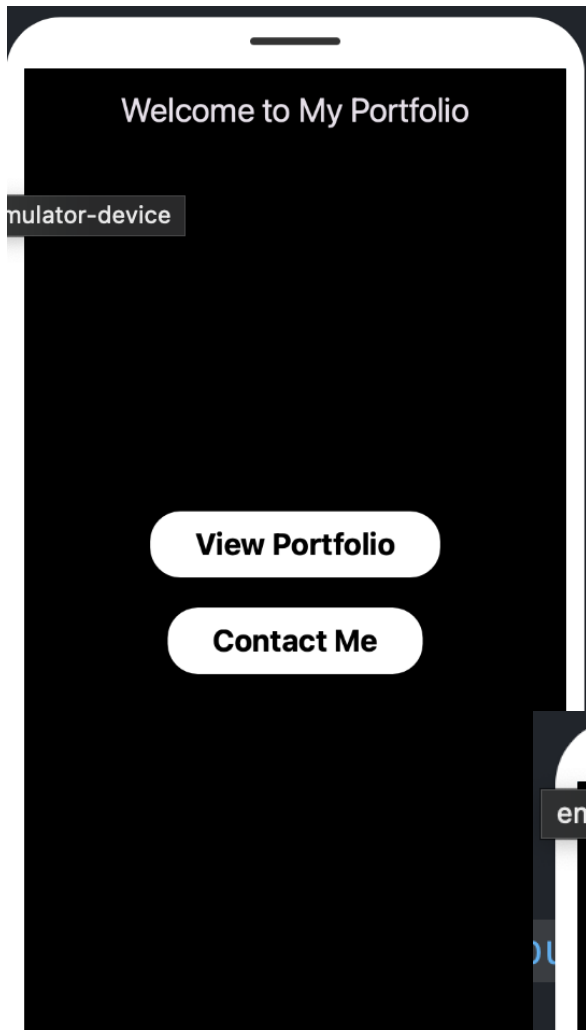
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Contact Me'),
        backgroundColor: Colors.black,
      ),
      body: Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: [
            Text('Email: rishi@example.com',
              style: TextStyle(fontSize: 18, color:
Colors.white)),
            Text('Phone: +91 9876543210',
              style: TextStyle(fontSize: 18, color:
Colors.white)),

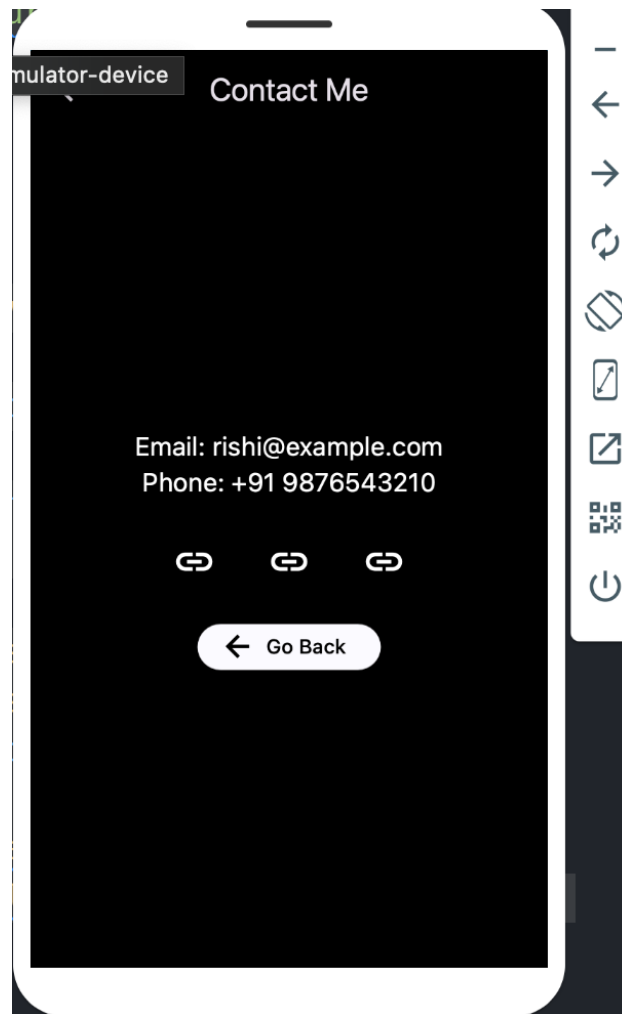
```

## RISHI GUPTA

```
        SizedBox(height: 20),
        Row(
          mainAxisAlignment: MainAxisAlignment.center,
          children: [
            IconButton(
              icon: Icon(Icons.link, color: Colors.white,
size: 30),
              onPressed: () =>
                _launchURL('https://linkedin.com/in/
rishigupta'),
            ),
            SizedBox(width: 20),
            IconButton(
              icon: Icon(Icons.link, color: Colors.white,
size: 30),
              onPressed: () => _launchURL('https://github.com/
rishigupta'),
            ),
            SizedBox(width: 20),
            IconButton(
              icon: Icon(Icons.link, color: Colors.white,
size: 30),
              onPressed: () =>
                _launchURL('https://instagram.com/
rishigupta'),
            ),
          ],
        ),
        SizedBox(height: 20),
        ElevatedButton.icon(
          onPressed: () => Navigator.pop(context),
          icon: Icon(Icons.arrow_back, color: Colors.black),
          label: Text('Go Back', style: TextStyle(color:
Colors.black)),
          style: ElevatedButton.styleFrom(
            backgroundColor: Colors.white,
            shape: RoundedRectangleBorder(
              borderRadius: BorderRadius.circular(20)),
          ),
        ),
      ],
    ),
  );
}
```

OUTPUT :





**LEARNING OUTCOME :**

## EXPERIMENT - 3

**AIM:** To develop a Flutter application utilizing Shared Preferences for efficient local data storage and retrieval.

**THEORY:**



**CODE :**

```

import 'package:flutter/material.dart';
import 'package:shared_preferences/shared_preferences.dart';

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: DataStorageScreen(),
    );
  }
}

class DataStorageScreen extends StatefulWidget {
  @override
  _DataStorageScreenState createState() =>
    _DataStorageScreenState();
}

class _DataStorageScreenState extends State<DataStorageScreen> {
  TextEditingController enrollmentController =
    TextEditingController();
  TextEditingController nameController = TextEditingController();
  TextEditingController projectController =
    TextEditingController();
  String studentDetails = '';

  @override
  void initState() {
    super.initState();

    // Save student data to shared preferences
    Future<void> saveStudentData(String enrollment, String name,
String project) async {
      try {
        SharedPreferences prefs = await
        SharedPreferences.getInstance();
        // Create a map to store student details using enrollment
        number as key
        Map<String, String> studentData = {
          'name': name,
          'project': project,
        };

```

## RISHI GUPTA

```
// Save the data in shared preferences, using the enrollment
number as the key
await prefs.setString(enrollment, studentData.toString());
} catch (e) {
  print('Error saving data: $e');
}
}

// Retrieve student data based on enrollment number
Future<void> getStudentData(String enrollment) async {
  try {
    SharedPreferences prefs = await
    SharedPreferences.getInstance();
    String? data = prefs.getString(enrollment);

    setState(() {
      studentDetails = data ?? 'No data found for this
enrollment number.';
    });
  } catch (e) {
    print('Error retrieving data: $e');
  }
}

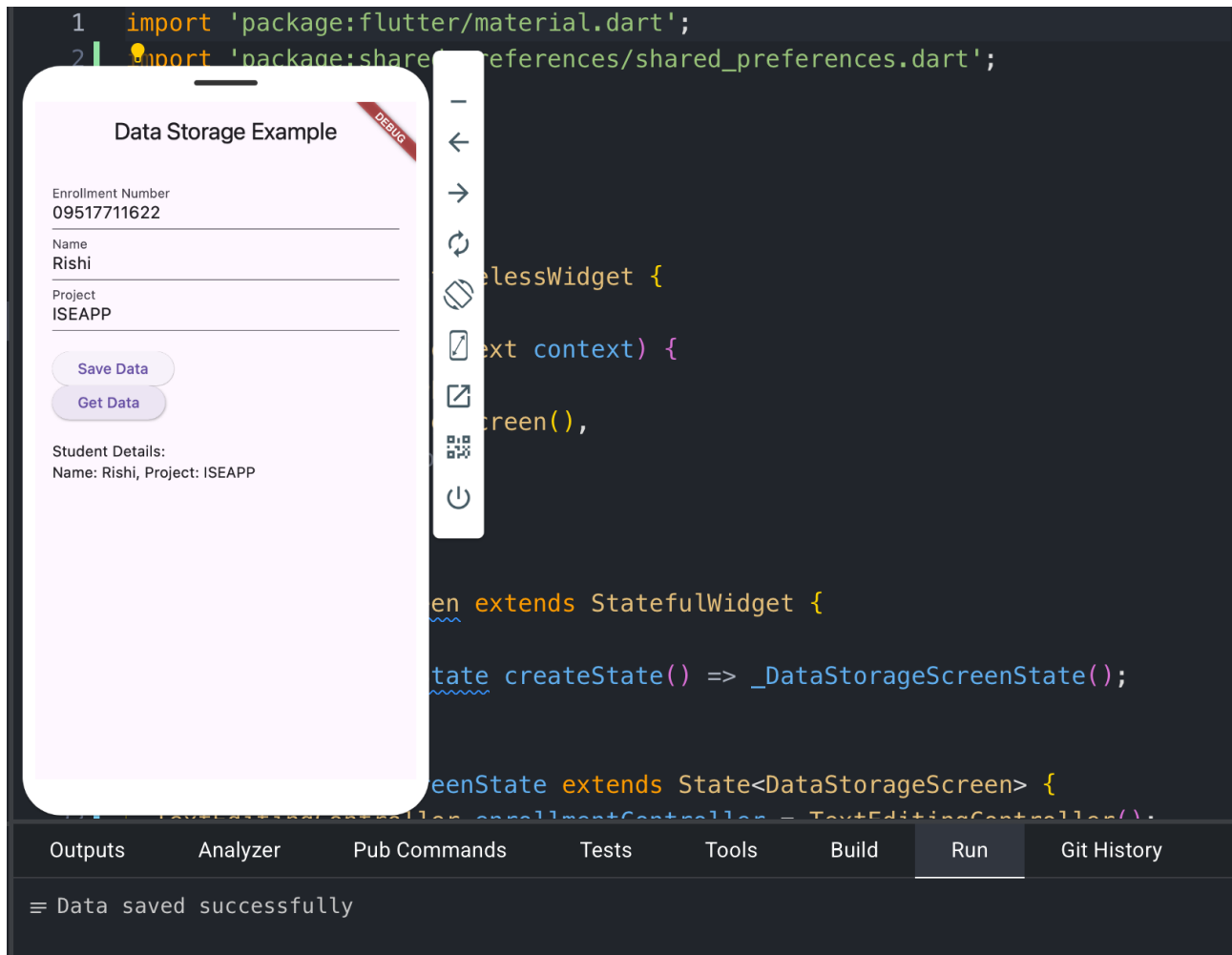
@override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      title: Text('Student Data Storage'),
    ),
    body: Padding(
      padding: const EdgeInsets.all(16.0),
      child: Column(
        children: <Widget>[
          TextField(
            controller: enrollmentController,
            decoration: InputDecoration(labelText: 'Enter
Enrollment Number'),
          ),
          TextField(
            controller: nameController,
            decoration: InputDecoration(labelText: 'Enter
Student Name'),
          ),
          TextField(
            controller: projectController,
            decoration: InputDecoration(labelText: 'Enter
Project Title'),
          ),
          SizedBox(height: 20),
          ElevatedButton(
            onPressed: () {
```

```

        String enrollment = enrollmentController.text;
        String name = nameController.text;
        String project = projectController.text;

        if (enrollment.isNotEmpty && name.isNotEmpty &&
project.isNotEmpty) {
            saveStudentData(enrollment, name, project);
        }
    },
    child: Text('Save Student Data'),
),
    SizedBox(height: 20),
    TextField(
        controller: enrollmentController,
        decoration: InputDecoration(labelText: 'Enter
Enrollment Number to Retrieve Data'),
    ),
    SizedBox(height: 20),
    ElevatedButton(
        onPressed: () {
            String enrollment = enrollmentController.text;
            getStudentData(enrollment);
        },
        child: Text('Retrieve Student Data'),
    ),
    SizedBox(height: 20),
    Text(
        'Student Details: $studentDetails',
        style: TextStyle(fontSize: 16),
    ),
),
),
),
),
);
}
}

```

**OUTPUT :****LEARNING OUTCOME :**

## EXPERIMENT - 4

**AIM:** To develop a Flutter application that interacts with the RESTful API to fetch and display data from remote sensor .

**THEORY:**

**CODE :**

```

import 'dart:convert';
import 'package:flutter/material.dart';
import 'package:http/http.dart' as http;

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Flutter REST API Demo',
      theme: ThemeData(
        primarySwatch: Colors.blue,
      ),
      home: MyHomePage(),
    );
  }
}

class MyHomePage extends StatefulWidget {
  @override
  _MyHomePageState createState() => _MyHomePageState();
}

class _MyHomePageState extends State<MyHomePage> {
  List<dynamic> _data = [];

  @override
  void initState() {
    super.initState();
    fetchData();
  }

  Future<void> fetchData() async {
    final response =
      await http.get(Uri.parse('https://jsonplaceholder.typicode.com/posts'));
    if (response.statusCode == 200) {
      setState(() {
        _data = json.decode(response.body);
      });
    } else {
      throw Exception('Failed to load data');
    }
  }

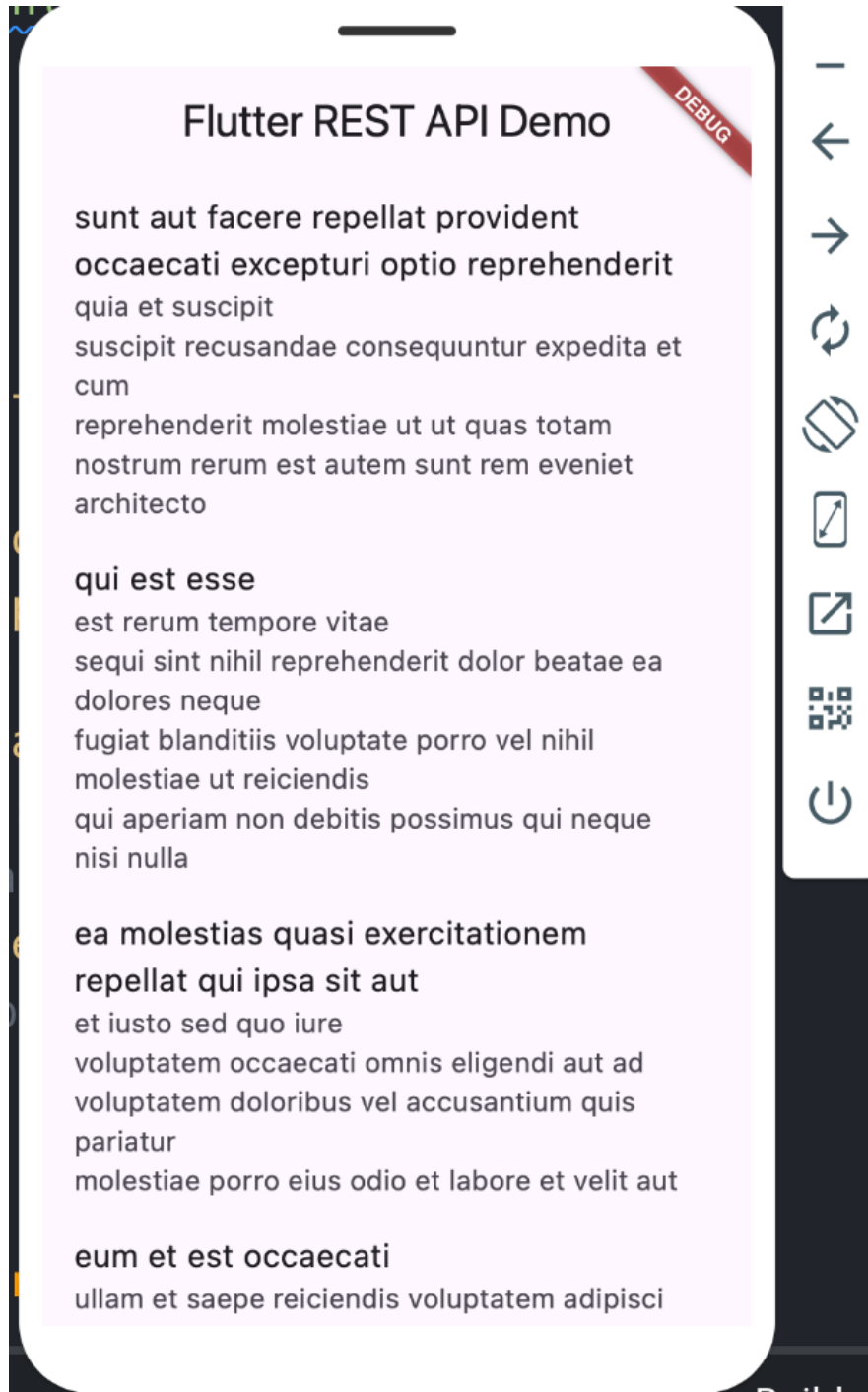
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Flutter REST API Demo'),
      ),
      body: _data.isEmpty
        ? Center(child: CircularProgressIndicator())
        : ListView.builder(
            itemCount: _data.length,
            itemBuilder: (BuildContext context, int index) {
              return ListTile(
                title: Text(_data[index]['title']),
                subtitle: Text(_data[index]['body']),
              );
            },
          ),
    );
  }
}

```

```

    );
  }
}

```

**OUTPUT :****LEARNING OUTCOME :**

## EXPERIMENT -5

**AIM:** To develop a Flutter application that integrate sensor acclerometer to capture and utilize the sensor data .

**THEORY:**



**CODE :**

```

import 'dart:async';
import 'package:flutter/material.dart';
import 'package:sensors_plus/sensors_plus.dart';

void main() {
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      theme: ThemeData(
        primarySwatch: Colors.green, // Set the app's primary theme color
      ),
      debugShowCheckedModeBanner: false,
      home: AccelerometerExample(),
    );
  }
}

class AccelerometerExample extends StatefulWidget {
  const AccelerometerExample({super.key});
  @override
  State<AccelerometerExample> createState() => _AccelerometerExampleState();
}

class _AccelerometerExampleState extends State<AccelerometerExample> {
  // List to store accelerometer data
  List<AccelerometerEvent> _accelerometerValues = [];
  // StreamSubscription for accelerometer events
  late StreamSubscription<AccelerometerEvent> _accelerometerSubscription;
  @override
  void initState() {
    super.initState();
    // Subscribe to accelerometer events
    _accelerometerSubscription = accelerometerEvents.listen((event) {
      setState(() {
        // Update the _accelerometerValues list with the latest event
        _accelerometerValues = [event];
      });
    });
  }

  @override
  void dispose() {
    // Cancel the accelerometer event subscription to prevent memory leaks
    _accelerometerSubscription.cancel();
    super.dispose();
  }

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text('Accelerometer Example'),
      ),
      body: Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: <Widget>[

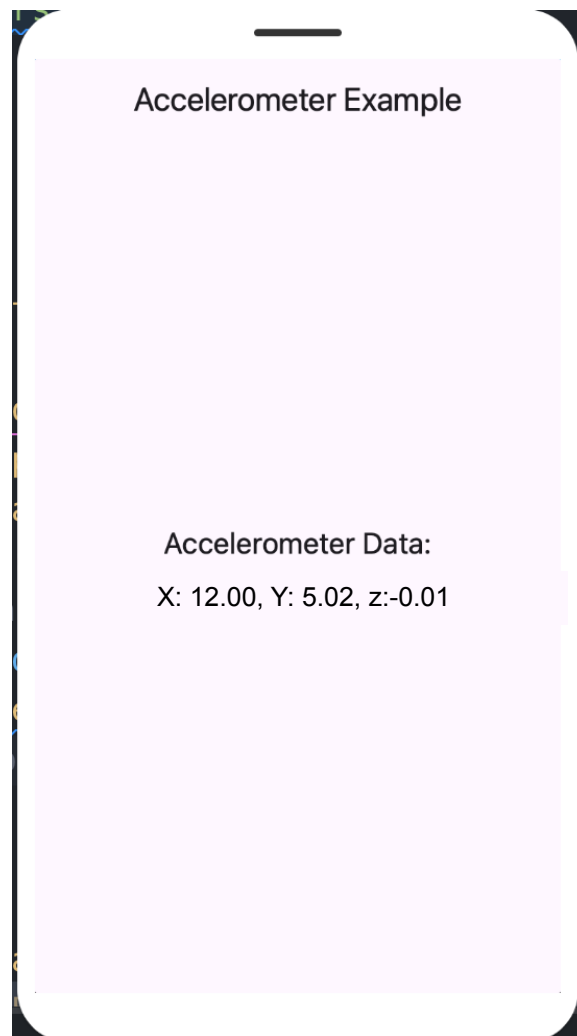
```

```

Text(
  'Accelerometer Data:',
  style: TextStyle(fontSize: 20),
),
 SizedBox(height: 10),
  if (_accelerometerValues.isNotEmpty)
    Text(
      'X: ${_accelerometerValues[0].x.toStringAsFixed(2)}, '
      'Y: ${_accelerometerValues[0].y.toStringAsFixed(2)}, '
      'Z: ${_accelerometerValues[0].z.toStringAsFixed(2)}',
      style: TextStyle(fontSize: 16),
    )
  else
    Text('No data available', style: TextStyle(fontSize: 16)),
),
),
);
}
}

```

**OUTPUT :**



**LEARNING OUTCOME :**

